

AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A task switching apparatus for switching execution of a task assigned to a time slot by switching time slots in a processor, comprising:

an assigning unit operable to assign, on a one-to-one basis, each of a plurality of first tasks to a corresponding one of first time slots among a plurality of time slots within a predetermined period, and assign a plurality of second tasks different from the plurality of first tasks to a single second time slot among the plurality of time slots within the predetermined period, the plurality of first tasks each having an assignment time, the plurality of second tasks each having a priority classification, and the single second time slot not for being assigned to any of the plurality of first task~~period; and~~

a time slot switching unit operable to switch time slots when an execution time of a task reaches an assignment time;

a task selecting unit operable to select a first task from the plurality of first tasks assigned to the first time slots when said time slot switching unit switches a current time slot to a time slot other than the second time slot, and to select at least one second task from the plurality of second tasks assigned to the second time slot when the current time slot is switched to the second time ~~slot; slot;~~

a memory unit in which programs for causing said respective units to function are stored;
and

a processor which executes the programs,

wherein ~~the at least one second task has a priority classification, and~~ said task selecting unit is operable to select the at least one second task from among the plurality of second tasks according to the priority classification.

2. **(Canceled)**

3. **(Previously Presented)** The task switching apparatus according to Claim 1,

wherein said assigning unit is operable to determine a time of the second time slot which is a residual time obtained by subtracting a total time of time slots to which the plurality of first tasks are assigned from a time of a predetermined period.

4. **(Previously Presented)** The task switching apparatus according to Claim 3,
wherein said assigning unit is operable to recalculate the residual time so as to determine the residual time as the time of the second time slot every time said assigning unit assigns a new first task to a time slot.
5. **(Previously Presented)** The task switching apparatus according to Claim 1,
wherein the first task is a task including a specification of an assignment time, and said assigning unit, when trying to add a new first task, in the case where a total sum of total assignment times of already-assigned tasks and an assignment time of the new first task exceeds a time period, refuses to assign a first time slot to the new first task.
6. **(Previously Presented)** The task switching apparatus according to Claim 1, further comprising:
a storing unit operable to store lock information regarding whether a resource capable of being accessed by a task is in a lock state ; and
a changing unit operable to change a state of a task from an executable state to a waiting state when task under execution is trying to access a resource in a lock state and change a state of the task from a waiting state to an executable state when the resource is unlocked,
wherein said task selecting unit eliminates the task in a waiting state from selecting targets.
7. **(Previously Presented)** The task switching apparatus according to Claim 6, further comprising:
a shifting unit operable to shift the processor to a power-saving state when no executable tasks is included in first and second tasks.
8. **(Previously Presented)** The task switching apparatus according to Claim 1 wherein the processor includes at least two register sets operable to store task contexts, further comprising:
a switching unit operable to prepare one of the register sets used for a task under

execution, return the context of a task to be executed next to another register set using background processing and switch register sets when switching time slots.

9. **(Currently Amended)** A task switching apparatus for switching tasks to be executed in a processor by switching time slots to which a task is assigned, comprising:

a first generating unit operable to assign, on a one-to-one basis, first time slots in a plurality of time slots within a period to each first task among a plurality of first tasks whose assignment time is specified, and generate time slot information including assignment time of each first task corresponding to each of the first time slots;

a second generating unit operable to assign a plurality of second tasks, each with a priority classification, to a single second time slot among the plurality of time slots within the period, and generate time slot information including an assignment time and at least one priority classification of at least one second task assigned to the second time slot;

a time slot switching unit operable to switch time slots when an execution time of a task reaches an assignment time;

a third generating unit operable to generate task management information including an address of each of tasks assigned to a time slot;

a storing unit operable to store the generated time slot information and task management information in association with each other;

a selecting unit operable to select time slot information stored in said storing unit at least once in the period; ~~and~~

a control unit operable to allow an execution of a task indicating task management information corresponding to the time slot information when time slot information to which a first task is assigned is selected, select a task from a plurality of task management information corresponding to the time slot information according to priority classifications and allow an execution of the task indicated by the selected task management information when time slot information to which at least one second task is assigned is selected;

a memory unit in which programs for causing said respective units to function are stored;
and

a processor which executes the programs.

10. **(Previously Presented)** The task switching apparatus according to Claim 9,
wherein said storing unit stores task management information of the plurality of second tasks as a queue in which the task management information is aligned in order of priority classifications , and
said control unit selects tasks corresponding to leading task management information of the queue.

11. **(Previously Presented)** The task switching apparatus according to Claim 10,
wherein said second generating unit sets a difference between the period and total assignment times of all first tasks in the corresponding time slot information as an assignment time of the second time slot.

12. **(Previously Presented)** The task switching apparatus according to Claim 11,
wherein said second generating unit recalculates the residual time so as to determine an assignment time of the second time slot every time said first generating unit assigns a time slot to a new first time slot.

13. **(Previously Presented)** The task switching apparatus according to Claim 12 wherein said storing unit further stores lock information regarding whether a resource capable of being accessed by a task is in a lock state , the task switching apparatus further comprising:
a queue managing unit operable to dissociate task management information of the task stored in said storing unit from time slot information when a task under execution attempts to access a resource in a lock state, have said storing unit store the task management information as a wait queue, and have said storing unit store task management information in a wait queue in association with time slot information when the resource is unlocked.

14. **(Previously Presented)** The task switching apparatus according to Claim 13 wherein the processor includes at least two register sets for storing contexts of tasks, further comprising:
a register set switching unit operable to prepare one of the register sets used for a task

under execution, return the context of a task to be executed next to another register set using background processing and switch register sets when switching time slots.

15. **(Currently Amended)** A task switching method for switching execution of a task assigned to a time slot by switching time slots in a processor, comprising:

assigning, on a one-to-one basis, each of a plurality of first tasks to a corresponding one of first time slots among a plurality of time slots within a predetermined period, and assigning a plurality of second tasks different from the plurality of first tasks to a single second time slot among the plurality of time slots within the predetermined period, the plurality of first tasks each having an assignment time, the plurality of second tasks each having a priority classification, and the single second time slot not for being assigned with any of the plurality of first tasks~~period~~;

switching time slots when an execution time of a task reaches an assignment time; and

selecting a first task from the plurality of first tasks assigned to the first time slots when a current time slot is switched to another time slot other than the second time slot, and selecting at least one second task from the plurality of second tasks assigned to the second time slot when the current time slot is switched to the second time slot,

wherein ~~the at least one second task has a priority classification, and~~ the at least one second task is selected from among the plurality of second tasks according to the priority classification.

16. **(Currently Amended)** A computer-readable ~~recording-storage~~ medium that stores a program for causing a computer to perform a method for switching execution of a task assigned to a time slot by switching time slots in a processor, the method comprising:

assigning, on a one-to-one basis, each of the plurality of first tasks to a corresponding one of first time slots among a plurality of time slots within a predetermined period, and assigning a plurality of second tasks different from the plurality of first tasks to a single second time slot among the plurality of time slots within the predetermined period, the plurality of first tasks each having an assignment time, the plurality of second tasks each having a priority classification, and the single second time slot not for being assigned with any of the plurality of first tasks~~period~~;

switching time slots when an execution time of a task reaches an assignment time; and

selecting a first task from the plurality of first tasks assigned to the first time slots when an after-switching time slot is not the second time slot and selecting at least one second task from the plurality of second tasks assigned to the second time slot so as to execute the task when the after-switching time slot is the second time slot,

~~wherein the at least one second task has a priority classification, and~~ the at least one second task is selected from among the plurality of second tasks according to the priority classification.

17. **(New)** The task switching apparatus according to Claim 1,

wherein each of the plurality of first tasks is a task required to satisfy processing performance in series, and each of the plurality of second tasks is a task not required to satisfy processing performance in series.